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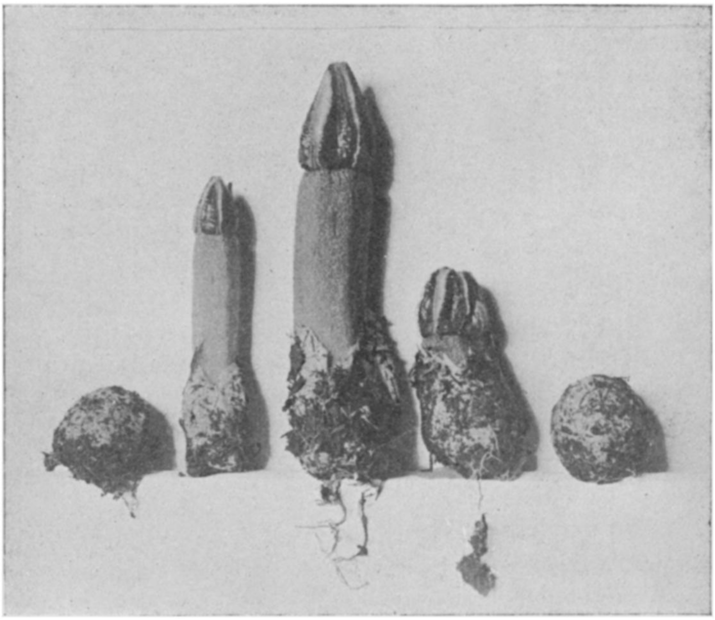
Anthurus borealis Burt.

By David Griffiths

This rare and interesting fungus so beautifully illustrated and fully described by Prof. E. A. Burt, Mem. Boston Soc. Nat. Hist. **3**: 487–505, has been found in a third locality in the state of New York. It has also been collected in one locality in Massachusetts. This then makes the fourth station in which the fungus has been collected. The last locality has furnished more material than any of the others, besides giving some additional data which are thought worth recording.

The records of the distribution of the plant which have come to my notice are as follows: East Galway, Saratoga Co., N. Y., Sept., 1896, E. A. Burt; Sherruck, Delaware Co., N. Y., Aug., 1897, F. B. Southwick, Annual Rep. State Bot., N. Y., 1897: 132; Waltham, Mass., Autumn of 1898, on authority of G. E. Morris; New York City, N. Y., Oct., 1899.



The first collection made the past season was on the eighth of October, in a rectangular plot of ground at the rear of the Library of Columbia University. The area is planted with ornamental shrubbery, and is completely covered with a thin layer of manure and rubbish used as a mulching for the young shrubbery. The surface of the ground has not been disturbed since early spring. The soil is a yellow clay mixed with considerable sand. There are surrounding the library four of these rectangular areas, one at each of the four angles of the building. The treatment of the soil, the planting and the mulching has been practically the same on the four areas during the season, but the two rear ones alone furnished crops of *Anthurus*. The one at the northeast corner produced but about a half dozen plants, but the one at the northwest corner furnished a great number. The locality where the plants were developed in abundance was, therefore, a shaded one, partially protected on all sides by buildings and trees.

It is certain that some plants matured and decayed before their presence was discovered; but the activity of several collectors in the vicinity would reduce the probability of their appearance to not earlier than the first of October. The last mature plants were collected on the 20th of the same month. On two occasions after this date, however, good sized eggs were secured. The last eggs were obtained on the 26th. These elongated in a moist chamber on the 29th. We can then say that the plant appeared approximately during the entire month of October. Doubtless the sudden decline of the temperature from the 19th to the 22d, the drouth which prevailed from this period onward, and the continual disturbance of the ground in search for the eggs all contributed to prevent further development after the 20th.

An abundance of material in various stages of development has been preserved. No less than two dozen eggs were allowed to develop in a moist chamber. One not over 1 ½ cm. in diameter produced an apparently normal plant of but 6 cm. in length. Several smaller eggs than this were secured, but none of them developed. The smallest egg seen was 3 mm. in diameter. The largest plant secured was one which developed naturally on the campus. It measured a little more than 19 cm. in length. The largest plant in the accompanying cut developed in a moist chamber from one of the largest eggs gathered. It measured 16 cm. in length. Fully 60 plants were seen during the month; making allowance for those which decayed unseen, there probably developed 75–100 plants on this small piece of ground.

Eggs considerably developed possess an enormous amount of vitality as evinced by the readiness with which they developed in a moist chamber after being separated from the mycelium. But this is true to a greater or less degree of many if not all of the phallales. One egg which had lain in a moist chamber for two days was cut in two in a median longitudinal plane one morning at 9 o'clock. The two sections were laid on a white piece of paper with the cut surfaces uppermost and placed in a south window to dry, for the purpose of making herbarium specimens of them. Although they remained in the window all day, and in direct sunlight not less than four hours, they elongated during the following night. The cut surfaces of the stipe were dried so that they could not elongate much, but the convex side of the sections elongated to nearly the normal length, and curved around the cut surface making semicircular figures.

Several methods of preservation were resorted to, but the one adopted by Professor Underwood was, on the whole, the most satisfactory, particularly for exhibition purposes; this consisted in stuffing the stipe with cotton and then fixing in 60% alcohol. A strong solution of formalin, 15–30%, gave fairly good results also, but a considerable amount of contraction occurred with all of the fixatives used.

It is fortunate that the plot of ground on which the fungus grew is so favorably situated. It will in all probability remain in practically the same condition as it is now for some time, thus giving an opportunity of studying the plant in the same locality for two or more successive years. It will be interesting to know whether, under favorable circumstances, the plant will appear again in the same locality next year.

Usually the eggs were found aggregated in groups of two to five. The mycelium was very abundant under the mulching, but the eggs were always more or less imbedded in the ground, and always connected with it by strong mycelial strands. The great variation in size has already been mentioned, but this was not necessarily the result of artificial development in a moist chamber, for several very small plants, about 8 cm. in length, were found developed under natural conditions. These, however, as a rule, grew beyond the mulching in the edge of the grass. The number of branches of the receptacle is quite variable. Professor Burt described the plant with five fully developed branches and one abortive one. While this is apparently the normal condition in our specimens, a large number were found with seven arms and a few with eight. But whether with six, seven or eight, the abortive or smaller branch is nearly always present.

The accompanying cut was made from a photograph by Dr. C. C. Curtis, taken from plants which elongated in a moist chamber. The plant in the center of the figure and the one next to it on the right are fully extended. The outside objects are medium sized eggs. The figures are reduced to a little less than one half natural size.

COLUMBIA UNIVERSITY, Nov. 15, 1899.